

Leader in flour applications.

A Range of Options: The Falling Number Toolbox



EMCEmalt, Alphamalt, Betamalt, Deltamalt –
The flexibility to control falling number and
baking performance

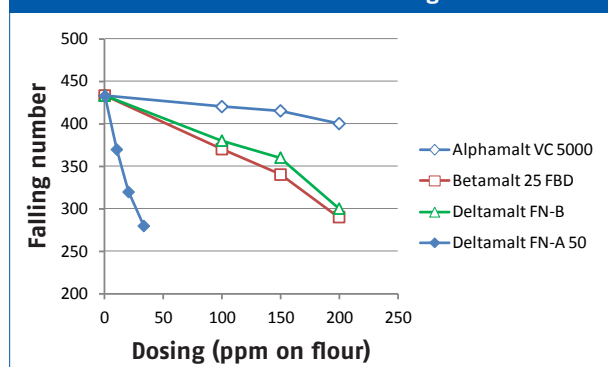
Control of the quality parameter falling number in the context of baking properties

Alongside wheat protein, the content of alpha and beta-amylases that break down starch, and the associated ability of the starch to gelatinise, are decisive factors in baking performance and thus flour quality. The falling number is one of the criteria used in rheology to determine amylase activity. Enzyme-poor flours give low-rising doughs and low baking volumes, dry crumb and low browning. Excessive enzyme content makes flour bake wet and gives an inelastic crumb structure.

A complete product range for any need – The Falling Number Toolbox

Although the falling number is a key quality parameter for many bakeries, rheological values do not always reflect the actual enzyme activity and baking properties of the flour. In order to optimise both parameters, Mühlenchemie offers tools that both reduce the falling number and improve baking performance. The product range offers a solution for every need.

Fig. 1: Comparison of the effects of Alphamalt, Betamalt and Deltamalt on the falling number



Benefits of the falling number toolbox

- Reduces the viscosity of the dough
- Increases fermentation ability and thus oven rising
- Increases the volume of baked goods
- Improves flavour and browning
- Reduces the tendency to bake dry
- Flexible choice of raw materials

EMCEmalt

Enzyme-active malt flour is widely used. It effectively reduces the falling number and improves the crumb and crust of baked goods. But malt flour has its limitations. It contains not just alpha and beta-amylases but also proteases that break down the dough framework and lead to sticky, weak doughs that may break.

Alphamalt VC 5000

This alpha-amylase significantly boosts the baking qualities of flour, including oven rising and finished volume. Since it is heat-sensitive, baking deactivates it quickly and so it has little effect on the falling number (Fig. 1). For this reason, Alphamalt VC 5000 is often combined with EMCEmalt, Betamalt 25 FBD or other enzymes to stay within the specified falling number.

Betamalt 25 FBD

This standardised amylolytic barley malt concentrate breaks starch down into maltose and reduces the falling number effectively even at low dosings (Fig. 1). Since Betamalt has much less proteolytic side effects than conventional malt flour, the reproducibility of the dough properties is much higher. Since Betamalt 25 FBD gives very little volume increase, it is often combined with other enzyme systems.

Fig. 2: Alphamalt, Betamalt and Deltamalt, dosage and bread volume compared to the standard



Deltamalt – the “two-in-one” solution

With the development of Deltamalt, Mühlenchemie has made an ideal addition to the Falling Number Toolbox. For the first time, the Deltamalt FN-A and FN-B range gives millers a way to simultaneously adjust both the falling number and the baking properties of dough.

In rheological analysis, at dosings as low as 50 ppm and lower Deltamalt FN-A 50 reduced the falling number of type 550 flour from about 440 s to 270 s. (Fig. 1). Deltamalt FN-B achieves similar results at 200 ppm.

These new enzyme systems also demonstrate their high effectiveness in test bakeries. Breads with Deltamalt FN-A 50 and FN-B gained more volume than breads with Alphamalt and Betamalt (Fig. 2). Crust and browning were comparable to Alphamalt VC 5000.

Deltamalt increases the expression of the falling number, since a lower falling number means much better baking performance.

For many flour mills the precise adjustment of component amounts is a challenge, but with the Falling Number Toolbox Mühlenchemie has a solution for any need.

Tab. 1: Dosing and effects of the Falling Number Toolbox elements

Product	Active component	Typical dosings in ppm	FNR*	BP**
EMCEmalt	Malt flour from germinated grain	500–2,000	+	--
Alphamalt VC 5000	Alpha-amylase from mould cultures	100–300	-	++
Betamalt 25 FBD	Amylolytic concentrate from barley malt	100–300	+	-
Deltamalt FN-A 50	Novel mould amylase	10–100	+	++
Deltamalt FN-B	Conventional mould amylase and grain enzymes	100–300	+	++

*FNR: Effect on falling number reduction

**BP: Effect on baking performance

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